



Mechanical Aerospace Ground Equipment (MAGE)

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Top Level Requirements



- **Provide High Fidelity FAME Bus Mock-Up for Harness Fabrication and Electrical Integration**
- **Provide Method(s) for Safe Handling and Transportation of FAME Bus and Integrated Spacecraft During All Phases of Assembly, Test, Transportation and Field Operations**
- **Provide Interfaces Between Flight Hardware and Test and Transportation Equipment**
- **Provide Tooling/Fixtures for Efficient Fabrication and Assembly of FAME Flight Hardware**
- **MAGE Design Safety Factors Comply With NRL and Range Requirements**
- **Use Existing MAGE (With Modifications) Wherever Possible As Cost Saving Measure**



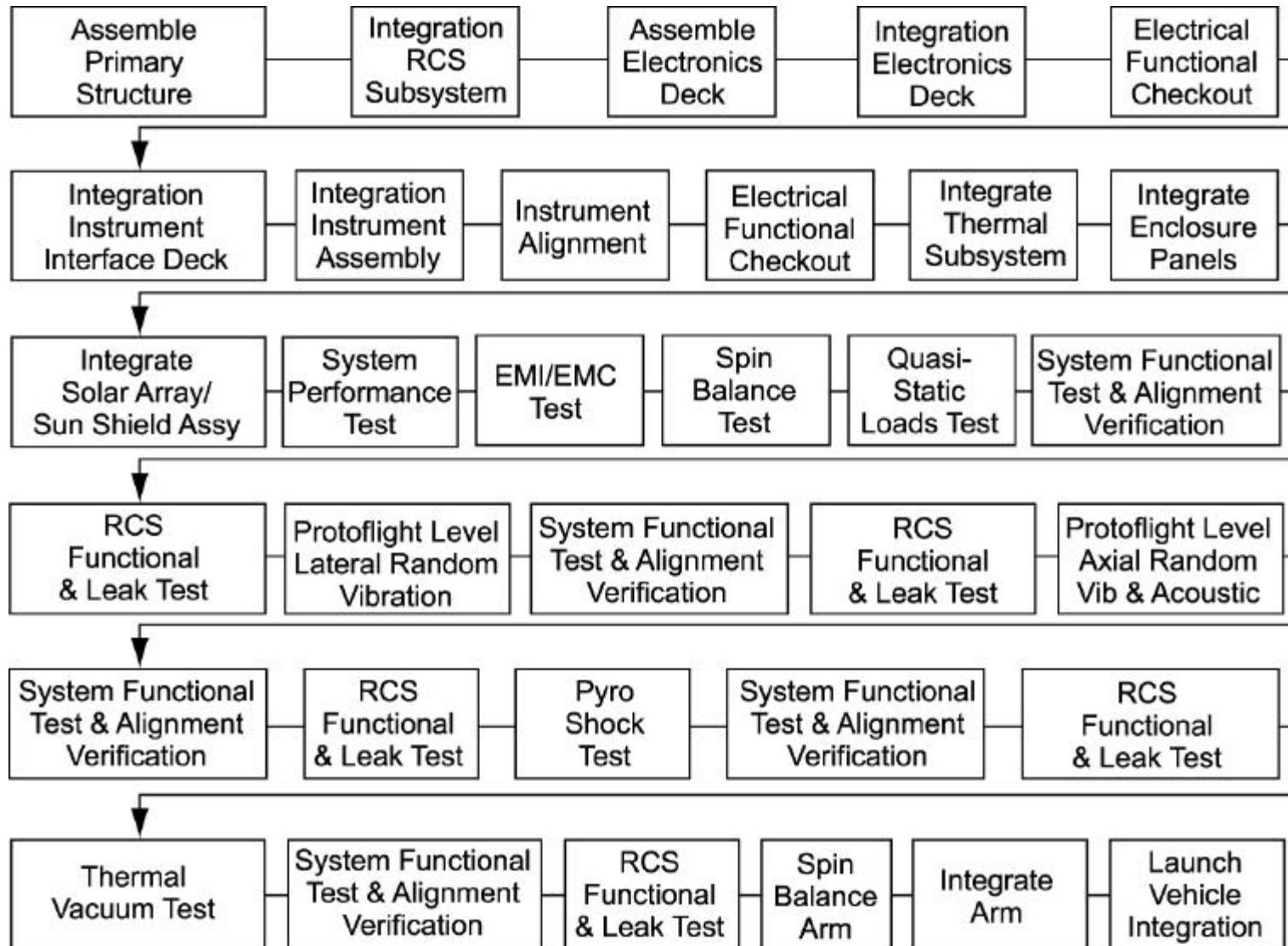
Current Baseline/Approach (1 of 2)



- **Newly Designed MAGE Requirements:**
 - High Fidelity FAME Bus Mock-Up for Harness Fabrication and Electrical Integration
 - Spacecraft Structure Assembly Fixture
 - Interstage Assembly Fixture (May Be Required)
 - Interface Fixture for System Level Testing
 - Interface Fitting for Transportation Container
 - Instrument Mass Simulator to Support Bus Testing
 - SRM Mass Simulator to Support Bus Testing
- **Modifications to Existing MAGE:**
 - Spacecraft Assembly Dolly
 - Spacecraft Transportation Container
 - Spacecraft Lift Fixture (May Require New Design)
 - Shipping Container for Interstage
 - Interstage Lift Fixture (May Be Required)



Current Baseline/Approach (2 of 2)



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Issues



- **Determine If FAME Will Fit in Existing NCST Transportation Container**
- **Identify FAME Magnetic Balancing Requirements and Facility**
- **Determine If NCST Facilities Are Adequate for FAME Spin Balance Requirements**
- **If Instrument Builder Is Making a Structural Test Article, Explore If It Could Be Used to Support FAME Bus Level Environmental Testing**
- **Establish Contract Requirement for SRM Vendor to Provide NCST the Short Term Use of Inert Motor (or Simulator) for Fit Check and Thermal Design Purposes**
- **Determine If SRM Vendor Could Provide a Mass Simulator at Lower Cost Than New Design and Build**
- **Define Instrument Builder Requirements for Interface Simulator(s)**
- **Determine If NASA Launch Vehicle Contract Has Provisions for Temporary Use of a DELTA II Third Stage PAF for Fit Check at NRL**
- **Need to Start Working Test Environments Document Soon After Kickoff to Have Released Version Ready at SRR**

